Level: master

Course title: Modelling of the geographic phenomena

Status: elective

ECTS: 5

Requirements: None

Learning objectives

The study of basic concepts and methods of numerical modelling of the geographic phenomena. Linking the previous knowledge of geographic phenomena with the possibilities of their numerical modelling. To apply the modelling approach in simulation, reconstruction and prediction of the geographic phenomena.

Learning outcomes

Minimum:

Students should learn the basic concepts and methods of numerical modelling of a geographic phenomenon. Students should gain a basic insight into the possibilities of reconstruction and predictability of the geographic phenomena.

Desired:

In addition to the stated above, students must demonstrate sufficient capacity to understand geographic phenomena to be able to independently model phenomena numerically. Students should apply the results obtained in different geographic and related disciplines.

Syllabus

Theoretical instruction

Mathematical introduction: continuous and discrete variables and functions, and conversion operations.
Introduction to IT: Input data, output data, display data, discrete variables, arrays and matrices, and mathematical operations with discrete variables.
The geographic/physical model, mathematical model and numerical model of the same geographic phenomenon.
Division of models: deterministic and stochastic models, exact and parametric models.
Design, creation and testing of geographic models.

Practical instruction

Application of models for simulation, reconstruction and prediction of geographic phenomena.

Weekly teaching load				Other:
Lectures: 2	Exercises: 2	Other forms of teaching: Tutorials and individual discussion. Study visits.	Student research: Possibility to participate in on-going research project, as an alternative to Student Project.	Exam final score: 50% Student project (or research) 50% oral exam.